have used French pitch, and English composers our high pitch. The first and last may compromise with the second, but are incompatible with each other. To sing Handel in modern English pitch is to unduly strain voices and spoil the effect originally intended. But we submit to it even in Handel festivals. There is a greater difficulty in altering pitch in England than on the Continent. We have no subsidised Conservatoires or theatres to which we can say: "Use this standard of pitch, or go without subsidy." Even regimental bands are not supplied at the expense of the State. A new set of instruments is very costly, and more than that, it is long before makers learn how to manufacture correctly to a new pitch. The question is therefore beset with difficulties. But the solution is certainly not to be found in the arithmetic of M. Soret.

THE SCIENCE AND ART MUSEUM, EDINBURGH

WE understand that Col. Murdoch Smith has been appointed by the Lords of the Committee of Council on Education to the Directorship of this Museum, in succession to the late Prof. Archer. As Lieut. Smith he was associated with Prof. Newton in the discoveries at Helicarnassus, and, subsequently, with Commander Pacher, R.N., undertook the explorations in the Cyrenaica which resulted in the acquisition by the nation of the valuable collection of sculptures now in the British Museum. Latterly, Col. Smith, while employed at Teheran, has acquired for the South Kensington Museum the large and valuable collection of Persian art and manufactures which is so well known there. We believe Col. Smith obtained his first Commission in the Royal Engineers direct from a Scottish University, and is one of the very few officers in that Corps who did not pass through the Royal Military Academy at Woolwich or Addiscombe.

NOTES

WE take the following from the *Times*:—The following is the list of selected candidates recommended by the Council of the Royal Society for the election to the Fellowship:—A. W. Baird, Major R.E., P. Herbert Carpenter, D.Sc., Sir Andrew Clark, M.D., Mr. A. A. Common, F.R.A.S., E. W. Creak, Staff-Commander, R.N., Prof. E. Divers, H. Hicks, M.D., W. M. Hicks, M.A., F. R. Japp, Ph.D., A. M. Marshall, M.D., Prof. H. N. Martin, D.Sc., C. O'Sullivan, Prof. J. Perry, Prof. Sydney Ringer, and Sidney H. Vines, D.Sc.

OF the fifteen candidates who have thus been selected no less than five are Cambridge men. Mr. W. M. Hicks was bracketed seventh wrangler in the Mathematical Tripos of 1873. Prof. H. N. Martin, Prof. Milnes Marshall, and Dr. Vines were the seniors in the Natural Science Triposes of 1873, 1874, and 1875 respectively, while Dr. Herbert Carpenter obtained a First Class in the Tripos of 1874, together with Mr. J. N. Langley, who was elected to the Royal Society in 1883. The name of the late Prof. F. M. Balfour follows that of Dr. Martin in the Tripos list of 1873; while the late Prof. A. B. Garrod was senior in 1871, and the Tripos list of 1870 contains the names of Francis Darwin and E. J. Romanes. The Natural Science Triposes from 1870 to 1875, inclusive, have thus furnished no less than nine Fellows of the Royal Society, either actual or elect. The names of seven more occur in the Mathematical Tripos lists from 1871 to 1880 inclusive, viz.: J. Hopkinson (1871), J. W. L. Glaisher (1871), H. Lamb (1872), A. B. Kempe (1872), W. M. Hicks (1873), Rr. T. Glazebrook (1876), and J. J. Thomson (1880). To these may be added the name of Dr. W. H. Gaskell, who obtained mathematical honours in 1869, but has since devoted himself to physiology. All who know Cambridge will recognise how largely these results are due to the influence and example of the late Prof. Clerk Maxwell and of Prof. Michael Foster respectively.

WE are informed that Dr. Frankland, F.R.S., has intimated his intention to resign the Professorship in Chemistry in the Normal School of Science and Royal School of Mines at the end of the current session. Applications for the post should be addressed to the Secretary, Science and Art Department.

THE Fifty-fifth Annual Meeting of the British Association will commence on Wednesday, September 9, 1885, at Aberdeen. The President-Elect is the Right Hon. Sir Lyon Playfair, K.C.B., M.P., Ph.D., LL.D., F.R.S. L. & E., F.C.S., who will take the place of Lord Rayleigh. The Vice-Presidents are His Grace the Duke of Richmond and Gordon, K.G., Chancellor of the University of Aberdeen, the Right Hon. the Earl of Aberdeen, LL.D., Lord-Lieutenant of Aberdeenshire, the Right Hon. the Earl of Crawford and Balcarres, F.R.S., James Matthews, Lord Provost of the City of Aberdeen, Prof. Sir William Thomson, F.R.S., Alexander Bain, M.A., LL.D., Rector of the University of Aberdeen, the Very Rev. Principal Pirie, D.D., Vice-Chancellor of the University of Aberdeen, Prof. W. H. Flower, F.R.S., Pres.Z.S., Director of the Natural History Museum. General Treasurer: Prof. A. W. Williamson, F.R.S., University College, London, W.C. General Secretaries: Capt. Douglas Galton, C.B., F.R.S., A. G. Vernon Harcourt, F.R.S. Secretary: Prof. T. G. Bonney, F.R.S. Local Secretaries for the meeting at Aberdeen: J. W. Crombie, M.A., Angus Fraser, M.A., M.D, Prof. G. Pirie, M.A. Local Treasurers for the Meeting at Aberdeen: John Findlater, Robert Lumsden. The Sectional Officers are as follows:—A. Mathematical and Physical Science. President: Prof. G. Chrystal, M.A., F.R.S.E. Vice-Presidents: Prof. C. Niven, F.R.S., Prof. A. Schuster, F.R.S. Secretaries: R. E. Baynes, M.A., R. T. Glazebrook, F.R.S., Prof. W. M. Hicks, M.A. (Recorder), Prof. W. Ingram, M.A. B. Chemical Science. President: Prof. H. E. Armstrong, F.R.S. Vice-Presidents: Prof. A. Crum Brown, F.R.S., Prof. H. McLeod, F.R.S. Secretaries: Prof. P. Phillips Bedson, D.Sc., F.C.S. (Recorder), H. B. Dixon, M.A., F.C.S., H. Forster Morley, D.Sc., F.C.S., W. J. Simpson, M.D. C. Geology. President: Prof. J. W. Judd, F.R.S., Sec.G.S. Vice-Presidents: John Evans, Treas.R.S., Prof. W. C. Williamson, F.R.S. Secretaries: C. E. De Rance, F.G.S., J. Horne, F.R.S.E., J. J. H. Teall, M.A., F.G.S., W. Topley, F.G.S. (Recorder). D. Biology. President: Prof. W. C. McIntosh, F.R.S. Vice-Presidents: Prof. I. Bayley Balfour, F.R.S., Prof. J. S. Burdon Sanderson, F.R.S. Secretaries: W. Heape, J. Duncan Matthews, F.R.S.E., Howard Saunders, F.L.S., F.Z.S. (Recorder), H. Marshall Ward, M.A. E. Geography. President: Lieut.-General J. T. Walker, C.B., R.E. F.R.S., F.R.G.S. Vice Presidents: Prof. James Donaldson, F.R.S.E., John Rae, M.D., F.R.S. Secretaries: J. S. Keltie, F.R.G.S., J. S. O'Halloran, F.R.G.S., E. G. Ravenstein, F.R.G.S. (Recorder), Rev. G. A. Smith. F. Economic Science and Statistics. President: Prof. Henry Sidgwick, M.A., Litt.D. Vice-Presidents: Prof. R. Adamson, M.A., LL.D., Sir Rawson W. Rawson, K.C.M.G., C.B., Pres.S.S. Secretaries: Rev. W. Cunningham, D.Sc., F.S.S., Prof. H. S. Foxwell, F.S.S. (Recorder), C. McCombie, M.A., J. F. Moss, F.R.G.S. G. Mechanical Science. President: Benjamin Baker, M.Inst.C.E. Vice-Presidents: Prof. W. C. Unwin, M.Inst.C.E., Prof. H. C. Fleeming Jenkin, F.R.S., M.Inst.C.E. Secretaries: A. T. Atchison, M.A., M.Inst.C.E. (Recorder), F. G. Ogilvie, M.A., E. Rigg, M.A., H. T. Wood, M.A. H. Anthropology. President: Francis Galton, F.R.S., President of the Anthropological Institute. Vice-Presidents

W. Pengelly, F.R.S., Prof. W. Turner, F.R.S. Secretaries: G. W. Bloxam, F.L.S. (Recorder), J. G. Garson, M.D., Walter Hurst, B.Sc., A. MacGregor, M.B. The First General Meeting will be held on Wednesday, September 9, at 8 p.m. precisely, when the Right Hon. Lord Rayleigh, M.A., D.C.L., LL.D., F.R.S., F.R.A.S., F.R.G.S., will resign the chair, and the Right Hon. Sir Lyon Playfair, K.C.B., M.P., Ph.D., LL.D., F.R.S. L. & E., F.C.S., President-Elect, will assume the Presidency, and deliver an address. On Thursday evening, September 10, at 8 p.m., there will be a Soirée; on Friday evening, September 11, at 8.30 p.m., a discourse by Prof. W. Grylls Adams, M.A., F.R.S., F.G.S.; on Monday evening, September 14, at 8.30 p.m., a discourse on "The Great Ocean Basins," by John Murray, F.R.S.E., Director of the *Challenger* Expedition Commission; on Tuesday evening, September 15, at 8 p.m., a Soirée; on Wednesday, September 16, the concluding General Meeting will be held at 2.30 p.m. The lecture to working men will be on the "Nature of Explosions," by Mr. H. B. Dixon, M.A., F.C.S., Fellow of Trinity College, Oxford.

We understand that the Marquis of Lorne is likely to succeed Lord Aberdare as President of the Royal Geographical Society.

Sir John Lubbock responded to the toast of "Science" at the Royal Academy dinner on Saturday evening, and in doing so adduced one more argument on behalf of science as a training and discipline even from the standpoint of art. He claimed for the workers in science that the careful habit of observation and study in which they are necessarily trained enable them to derive peculiar enjoyment from the creations of artistic genius; and he might have suggested in this connection the great advantage to the artist himself of a preliminary training in practical scientific work.

Sir Frederick Bramwell has evidently a very high ideal of the training necessary to qualify a civil engineer for the performance of the duties of his calling. At the anniversary dinner last week he told his audience that the ideal engineer—"I am glad to say in many cases the real engineer—of the present day is one who has a scientific knowledge as the foundation for his technical training, and frequently that scientific knowledge is of a very extended character. Mechanics, it need hardly be said, are essential, but, in addition, many branches of physical science, such as heat, light, sound, hydraulics, pneumatics, magnetism, electricity, are all now within the knowledge of the accomplished engineer. Moreover, although I do not suggest that every engineer should be a chemist, it is quite certain that he should not be without some chemical instruction, even if it be confined to that which is needed to warn him that the time has arrived when he should seek sound chemical advice."

Dr. Noetling, of the University of Königsberg, has been despatched by the Prussian Academy of Sciences to Lebanon, to study the geology of the Greater Hermon.

The Italians have lost no time in erecting a meteorological station at Massowah, which they have occupied quite recently.

Early in the afternoon of the 2nd a loud detonation was heard from Mount Vesuvius, and two new craters, from which lava issued abundantly, were opened on the southern side at a height of about 200 metres above the upper station of the funicular railway. The lava flowed in the direction of Pompeii and Torre del Greco. The stream descends in a straight line for about half a kilometre, and then, turning sideways, is directed towards the crater of 1872. The new craters present the appearance of a great cleft. The lava has not spread beyond the side of the mountain, and according to the latest telegram the eruption is not increasing.

At half-past 1 o'clock on the morning of the 1st inst. two or three rather violent shocks of earthquake were felt at Vienna, accompanied by a rolling noise, and causing a great clattering of furniture. Shocks of far greater violence were experienced in Styria, where many houses were damaged and some persons were killed. In the western districts the shocks were of a slight character. The phenomenon appears to have extended southward as far as Grätz and westward to Bavaria. A shock was also felt at Monte Carlo at 10 minutes to 3 on the morning of the 2nd. The shock was strongest in the districts of Condamone and the Cap d'Aile.

The Annual General Meeting of the members of the Iron and Steel Institute commenced yesterday. The Bessemer medal for the year was presented to Prof. Richard Äkermann by Dr. Percy, F.R.S., the newly-elected President, who gave his inaugural address. The meeting will be continued to-day and to-morrow. The following is a list of some of the principal papers:—On the blast furnace value of coke from which the products of distillation have been collected, by Mr. I. Lowthian Bell, F.R.S.; on the manufacture of steel, by Sir Henry Bessemer, F.R.S.; on the mechanical properties of steel, by Dr. H. Wedding; on the microscopic structure of steel, by Dr. Sorby; on the causes of failures in steel plates, by Mr. W. Parker, of Lloyd's; on a new description of wrought-iron castings, by Mr. T. Nordenfelt; on natural gas, and its utilisation for manufacturing purposes in the United States, by Mr. A. Carnegie; on a modified type of the Siemens gas-producer, whereby the gases are enriched and the bye-products recovered, by Mr. J. Head. We propose to draw attention to the scientific points in some of these papers next week.

Prof. W. Odling will give the first of two lectures on Organic Septics and Antiseptics, at the Royal Institution, on Saturday, May 16.

There is an excellent programme for May at the Royal Victoria Hall and Coffee Tavern, Waterloo Bridge Road, S.E. The science lectures on Tuesdays will be given by Dr. Dallinger, on wonderful things we do not personally see, on the 12th; and by Prof. Perry on the spinning tops of Japan and other countries, on the 19th. Owing to the depression in trade and wishing to put enjoyable entertainments within every one's means, the management have decided to lower the prices of admission during May.

The Russian Geographical Society has awarded, this year, its great Constantine medal to M. A. S. Woeikoff for his important work, "The Climates of the Globe, and especially of Russia." Analysing this work in the "Annual Report for 1884" of the Society, Dr. Robert E. Lenz shows how original it is in its fundamental idea. Instead of representing the climates as they result from the averages of climatological elements, as is usually done in meteorological works, M. Woeikoff, like Dr. Hann in his "Handbuch der Klimatologie," but with much more fullness and details, tries to explain the local alterations which the general meteorological laws are submitted to in various countries in consequence of the topographical features of these last; and he verifies his conclusions with regard to each country by comparing them with those arrived at as to the climates of neighbouring countries, and establishes thus the elements of a comparative meteorology. The extensive travels of the author in Asia and America have enabled him to recognise the leading meteorological features of the climates he describes and to become acquainted, by personal knowledge, with the topographical features of each separate region. The first twenty-two chapters of this volume, 640 pages, are devoted to a detailed analysis of the chief meteorological elements: the heat received from the sun; the dynamical and thermical consequences of the rising and falling of masses of air; the hydrometeors and their influence on the climates of separate regions—many quite new and original remarks and observations being embodied in these five chapters; the influence of snow and ice-coverings—two chapters again where the meteorologist and geologist will find a series of most interesting suggestions; the temperature of lakes, seas, and oceans; the influence of wind; the variations of temperature with the height—very carefully discussed; the diurnal changes and the unperiodical ones; and finally, the influence of climate on vegetation, and *vice versâ*—again two chapters full of new appreciations. The climates of eight separate regions—Atlantic, North and Middle America, Tropical America, Middle and South Africa, Mediterranean basin, North-West and Middle Europe, South-Eastern Asia, and finally Russia and Northern Asia, are discussed with great detail and with a richness of quite new data in ten separate chapters. Needless to add that the author, well acquainted with so many foreign languages, has embodied in his work all that is worthy of notice in meteorological literature. The work is illustrated by ten maps and fourteen drawings, and contains very numerous tables.

During the opposition of Neptune, just passed, we learn from *Science*, Prof. Pickering continued the observation of the planet's magnitude with the meridian photometer of the Harvard College Observatory in the same method as previously employed. Nine series of observations extend from December 16, 1884, to January 21, 1885, the final result from which, when corrected for atmospheric absorption, instrumental error, and reduction to mean opposition, becomes 7·63. The residual difference for only one series is as great as two-tenths of a magnitude. The corresponding results for two previous seasons are 7·71 and 7·77. Contrary to the experience of Mr. Maxwell Hall, of Jamaica, who found evidence for a rotation-period of Neptune in small variations of the planet's light according to his own observations, Prof. Pickering regards it as improbable that there is any variation in the light of Neptune of a strictly periodic character, and further calls attention to the influence, much neglected by observers, upon the observed brightness of objects when seen east and west of the meridian on the same night. This has to be taken account of in the observations of maxima and minima of many variable stars, and may to some extent account for the variations of Neptune's light detected by Mr. Hall.

The report of the Post Office, Telegraph, and Observatory Departments of South Australia for the past year contains a detailed account *inter alia* of the work of the Observatory Department in that colony since its foundation in 1867. It would be impossible to do more than refer generally here to numerous details given in the ten closely-printed foolscap pages devoted to the subject. Since its establishment the department appears to have kept pace with the strides of the colony to which it belongs. The astronomical observatory at Adelaide is now well supplied with meteorological appliances, having self-recording and other instruments necessary to constitute it a first-class station as defined by the Meteorological Congress at Vienna. There are also fourteen well-equipped stations of the second order, scattered all over the colony, from Port Darwin, in the extreme north of the continent, to Cape Northumberland in the extreme south. Rain-gauges are kept at every telegraph office in the colony; in 1870 there were reports from forty-six stations; in 1883 from 254, and there are still large gaps to be filled up. A system of weather-telegraphy has been arranged between the Australasian colonies, these being divided into districts or aspects to facilitate the transmission of the messages, and to afford the necessary data for laying down the isobars. The important operations undertaken to determine Australian longitudes are also described in detail. Mr. Todd, the head of the combined departments—post, telegraph, and observatory—anticipates great assistance in the inter-colonial meteorological part of his work from Mr. Clement E. Wragge's high-level meteorological station on Mount Lofty, "as he brings to his work great practical experience and almost unbounded enthusiasm."

The last number (vol. v. No. 4, 1885) of the *Proceedings* of the Bath Natural History and Antiquarian Field Club contains papers on the group of stones at Stanton Drew, in Somersetshire, by Mr. J. Allen Tucker, in which he favours the theory that these huge monuments are the remnants of a temple, either erected by the Druids or by some primeval or prehistoric race, and only used by the Druids, and were not intended to commemorate a battle, which was too common an event in early times; by Rev. L. Blomefield, on a second specimen of the rare Longicorn beetle found in Bath; by Mr. Williams, on the natural history of British owls; and by Mr. Morgan, on water-supply, principally as applied to domestic purposes. There are also several minor contributions noticed in the summary of proceedings at the meetings.

We have received the prospectus of a Field Club for Hampshire, the Honorary Secretary to which is Mr. E. Westlake, Fordingbridge, Salisbury. The first meeting is to be held at Winchester on May 28. The marvel is that a county as varied as any in England in this respect should have been so long without its Naturalists' Field Club. White of Selborne on the east, and Kingsley on the north, have made the county a classic one for students of nature. With these examples to live up to, and such a field as Hampshire (including the Isle of Wight) the Proceedings of the new club should be interesting and successful.

The Report of the Committee of the Kelvingrove Museum of Glasgow for the past year illustrates the truth of a remark of Mr. Higgins in his pamphlet on museums recently noticed in these columns, viz. that the number of museums in which a sum of money could be best spent in making additions is very small; that is, as a rule, arrangement is more needed than acquisition. The Committee of the Kelvingrove Museum report that the establishment has been overcrowded for years, that the enormous amount of specimens of all kinds stored away out of sight is constantly increasing, and that the labour and unremitting watchfulness required to keep such stored specimens from deteriorating grows in proportion, and withdraws from essential and more useful museum work much of the time of the small staff, and it has thus become from year to year increasingly difficult to undertake any considerable project for improving the order, classification, or labelling of any section of the museum. This is certainly a grave evil, for it threatens to destroy the main object of such a museum, viz. public instruction. It is to be hoped that a wealthy and public-spirited town such as Glasgow will not permit this state of things to continue; for, as the Report points out, from the stores already within the museum, supplemented in some departments by inexpensive and easily acquired objects, a natural history museum could be equipped which would satisfactorily illustrate all the range of the animal kingdom, and prove at once of great value to the student of zoology, and a popular attraction to the public. For the rest, there has been "a large, steady, and well-maintained flow of visitors, which does not show any indication of waning."

The Lyceum of Natural History of Williams College, Williamstown, Mass., the oldest natural history society but one connected with any college in the United States, will celebrate its fiftieth anniversary on the 24th of this month, at which a former member, Dr. W. K. Brooks, of the class of 1870, now Associate of Johns Hopkins University, will deliver an address. The Lyceum proposed to take advantage of the occasion to raise funds to enable it to undertake expeditions to some spot, similar to those which it has undertaken in former years to Labrador, Florida, &c.

WE learn from *Science* that the Leander McCormick Observatory of the University of Virginia was inaugurated on April 13, the ceremonies taking place in the public hall of the institution, and Prof. Asaph Hall, of the Naval Observatory, Washington, delivering the address. The principal instrument is the great Clark refractor of 26 inches' aperture. The Observatory has a house adjoining for the director, Prof. Stone, and is possessed of a considerable endowment fund, the gift of Mr. W. H. Vanderbilt, of New York.

CAPT. L. U. HERENDEEN, of San Francisco, communicates the following notes on prehistoric structures in Micronesia to *Science:*—A few years ago I visited Ponapé Island in the Pacific, in E. longitude 158° 22′, and N. latitude 6° 50′. The island is surrounded by a reef, with a broad ship-channel between it and the island. At places in the reef there were natural breaks, that served as entrances to the harbours. In these ship-channels there were a number of islands, many of which were surrounded by a wall of stone five or six feet high; and on these islands there stood a great many low houses, built of the same kind of stone as the walls about them. These structures seem to have been used as temples and forts. The singular feature of these islands is that the walls are a foot or more below the water. When they were built, they were evidently above the water, and connected with the mainland; but they have gradually sunk until the sea has risen a foot or more around them. The natives on the islands do not know when these works were built: it is so far back in the past, that they have even no tradition of the structures. Yet the works show signs of great skill, and certainly prove that whoever built them knew thoroughly how to transport and lift heavy blocks of stone. Up in the mountains of the island there is a quarry of the same kind of stone that was used in building the wall about the islands; and in that quarry to-day there are great blocks of stone that have been hewn out, ready for transportation. The natives have no tradition touching the quarry—who hewed the stone, when it was done, or why the work ceased. They are in greater ignorance of the great phenomena that are going on about them than the white man who touches on their island for a few hours for water. There is no doubt in my mind that the island was once inhabited by an intelligent race of people, who built the temples and forts of heavy masonry on the high bluffs of the shore of the island, and that, as the land gradually subsided, these bluffs became islands.

A CORRESPONDENT recently referred to the use of artificial teeth by the ancient Romans, as shown by a passage from Cicero, where one of the laws of the Twelve Tables is quoted. The law in question belongs to the Tenth Table (*de jure sacro*), which deals mainly with funerals, with the object of limiting the display and ceremonies attending them. Thus the body must not be burnt in more than three robes, or be attended to the grave by more than ten musicians; women must not tear their faces in time of mourning, nor must the bones be collected to make a new funeral with them, the bodies of slaves could not be embalmed, and the like. Section IX. of Table X., which is the one relating to teeth, reads as follows in Ortolan's text ("Histoire de la Législation Romaine," p. 121): "*Neve aurum addito. Quoi auro dentes vincti escunt, ast im cum illo sepelire urereve se fraude esto*—Add no gold; but if the teeth are bound with gold, then that gold may be buried or burnt with the corpse." The date of the Twelve Tables is put about 450 B.C., and it is thought possible by some writers that some of the provisions relating to funerals were taken from the laws of Solon. It would therefore appear that dentistry was known and practised to some extent in the earliest period of their history by the Romans—to an extent, at any rate, that they used gold for binding the teeth. How the artificial teeth were made, or whether they had artificial teeth at all, is not apparent. In the case of the Etruscan skull mentioned recently in NATURE, the artificial teeth are made from the teeth of animals.

M. SOROLOFF, who continues his regular analyses of the water of the Neva, has come to the conclusion that the differences between the average monthly content of solid mixture in the water and the yearly average may be expressed by a curve whose characteristics are the opposite to those of the curve for the average monthly temperatures. The solid inorganic deposit remaining after the evaporation of a given amount of water is also inversely proportionate to the amount of organic matter contained by the water of the Neva. When comparing these curves for the Neva with that showing the amount of solid matter contained by the Thames (as given in the *Journal* of the London Chemical Society for 1880), it appears that both rivers give the same curves, notwithstanding the wide difference of their origins, which coincidence may lead to the supposition that the above might be considered as a law for the rivers.

THE additions to the Zoological Society's Gardens during the past week include a Yellow Baboon (*Cynocephalus babouin* ♀) from West Africa, presented by Mrs. Wilson; a Lesser White-nosed Monkey (*Cercopithecus petaurista* ♀) from West Africa, presented by Mr. James S. Jameson; a Crested Pigeon (*Ocyphaps lophotes*) from Australia, presented by Mr. J. Harrison; a Glaucous Gull (*Larus glaucus*), European, presented by Mr. G. Edison; a Common Viper (*Vipera berus*), British, presented by Mr. W. H. B. Pain; four Common Lizards (*Lacerta vivipara*), British, presented by Mr. H. Hanauer; a Common Squirrel (*Sciurus vulgaris*), British, three Wigeons (*Mareca penelope* ♀ ♀ ♀), three Pintails (*Dafila acuta* ♀ ♀ ♀), two Shovellers (*Spatula clypeata* ♀ ♀), five Common Teal (*Querquedula crecca* ♂ ♂ ♂ ♀ ♀), European, purchased; a Yak (*Pœphagus grunniens*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

TUTTLE'S COMET.—This comet returns to perihelion in the present year under circumstances which are not favourable for its re-observation, without an ephemeris deserving of some degree of reliance. For the last return in 1871 the perturbations during the previous revolution were very accurately determined by Tischler, of Königsberg, who lost his life before Metz in the Franco-German war; and the comet was detected at Marseilles about seven weeks before the perihelion passage, and was followed at the Cape of Good Hope for a still longer period after it. So far it does not appear that the observations of 1871-72 have been brought to bear upon the predicted elements, nor has it been notified that any one is occupied in ascertaining the effect of planetary attraction since the comet was last observed. Tischler's mean motion for 1871, neglecting perturbation, would bring the comet to perihelion again about 1885, September 23·5 G.M.T., and under this condition the comet's position will by readily commanded during the absence of moonlight in August, but unfortunately the theoretical intensity of light will be below the least value with which it has been thus far observed. Assuming the perihelion passage to fall on September 23, the following would be the rough places of the comet:—

At Greenwich Midnight

	R.A.	Decl.	Distance from		Intensity of Light
	°	°	Earth	Sun	
August 10	106·5	+33·8	1·89	1·22	0·19
14	110·1	31·6	1·85	1·19	
18	113·6	29·3	1·82	1·17	0·22
22	117·0	26·7	1·78	1·14	
26	120·4	+24·0	1·75	1·12	0·26

In 1871, when the comet was detected by Borrelly at Marseilles with the aid of Tischler's ephemeris, the intensity of light was 0·54, and at the last Cape observation, 0·33. On August 10 the effect of an acceleration of eight days in the time of perihelion passage would be to increase the comet's right ascension rather more than 3°, and to diminish the declination about 4°·4.